

# Westway and Imperium Expansion Projects

## Draft Environmental Impact Statements



## ►► Crude Oil Environmental Health and Safety Fact Sheet



The Westway and Imperium Expansion Projects would receive crude oil by train, store the oil on the project sites, and transport the oil from the sites by vessel (ships or barges). The crude oil handled by the projects could be from the Bakken oil fields in the north-central United States, or from other places in the U.S. or Canada.

Crude oil can pose risks to people and the environment from spills, fires, or explosions (incidents). The level of risk (or how likely something is to happen and how much damage it can cause) varies significantly depending on the circumstances.

Preventing an incident is the only way to avoid damage or injury to people or the environment. If a spill, fire, or explosion happens, a quick and organized response can minimize the amount of harm.

### What environmental health and safety impacts were analyzed?

Spills could happen on land or in water, during the day or night. The studies looked at the different risk levels of spills, fires, or explosions happening due to the proposed projects. The studies mainly looked at the impacts of incidents at the terminals, along the Puget Sound & Pacific (PS&P) rail line, and in the Chehalis River and Grays Harbor. Risks along the main rail lines within Washington and outside of Grays Harbor along the West Coast were also discussed.

The studies looked at the general impacts a spill, fire, or explosion could have on people, air, water, plants, animals, land and shoreline uses, aesthetics, recreation, cultural resources, and tribal resources. The actual impacts would depend on where a spill happens, how much oil is spilled, the weather, and water movement. If a spill reaches water, it could spread over a large area, increasing potential impacts. The amount of potential impacts would also depend on actions taken to respond to, and stop the spill.

## How were the impacts analyzed?

The studies describe the current risks of an incident happening in Grays Harbor. They describe the risks of incidents considering the proposed facilities' operations and transportation by trains and vessels. The 2014 Washington State Marine and Rail Oil Transportation Study and many other data sources were used. The type of oil and its chemical and physical properties were considered. Oil spill modeling was used to show how a spill of oil could move if it reached Grays Harbor or the Chehalis River.

The studies describe what is legally required for facilities, trains, and vessels to prevent and respond to incidents, and discuss potential risk of an incident and the potential impacts. Finally, the studies include actions that can mitigate or offset the potential impacts and risk.

## How was the risk analysis conducted?

The risk assessment looked at different spill scenarios, including small, medium, and large spills at the facilities and from trains and vessels. The risk assessment considered the different proposed activities, like transporting oil or transferring oil. It also considered the different sizes of the storage tanks, rail cars, and vessels that would be used to store or transport oil.

This information was used along with data from past incidents to identify the likelihood of an incident happening. Then the analysis looked at how likely it would be for a spill to reach water in Grays Harbor or the Chehalis River, and how likely it would be for a spill to result in a fire or explosion. Finally, the analysis looked at the likelihood of an incident to cause environmental impacts.

	RISK	
<b>Likelihood of an Incident</b> The studies considered the type of operations, transportation routes, and historical information to determine the probability of a spill, fire, or explosion.	<b>Unlikely to happen</b> means a spill would occur under unusual operations or conditions expected to rarely happen.	<b>Likely to happen</b> means a spill would occur during regular transportation and facility operations or under conditions expected to frequently happen.
<b>Likelihood to reach water</b> Federal and state regulations require equipment and design features, such as containment areas to catch spills or equipment like emergency shutoffs. These requirements are factors in determining the amount of oil that could reach water.	<b>Unlikely to reach water</b> means all or most of the spill would stay within a containment area or that the incident does not happen near water.	<b>Likely to reach water</b> means the spill exceeds the containment or occurs on or near the water and outside of a containment area.
<b>Potential environmental impact</b> Impacts from an incident and their damage to the human and natural environment vary widely based on the material type and amount, location, proximity to water, and weather conditions.	<b>Low</b> means the spill could result in a small amount or no oil entering the environment.	<b>Severe</b> means the spill would likely result in a large amount of oil entering the environment and extensive damage to the human and natural environment.



## What are the requirements for preventing or responding to spills?

There are many federal and state laws with requirements for oil spill response. These rules are for facilities that handle oil, trains that carry oil, and vessels that carry oil.

Agencies and companies that respond to spills develop response plans. These include national, regional, state, and local plans that are all connected. Each facility and rail and vessel operator must also prepare for spills, and be ready to respond to a spill.

## Would the proposed projects cause any significant and unavoidable adverse impacts?

A large oil spill, fire, or explosion would likely include unavoidable and significant adverse environmental impacts. The likelihood of a large spill or related explosion is low; however, the potential for significant consequences to the environment and human health in the event of a large spill or explosion is high. The specific impacts would depend on the location, the type and amount of liquid spilled, proximity to water, and weather conditions. The studies explain legal requirements to prevent, prepare for, and respond to a large spill, fire, or explosion. The studies identify measures that could mitigate or offset potential impacts, but no mitigation measures would completely eliminate the possibility of an incident, nor would they eliminate the adverse consequences of a large spill, fire, or explosion.

The following sections provide additional detail on the risks and mitigation for different spill scenarios, including at the terminal, from trains, and vessels.



Imperium rail yard and plant

## At the Terminals

### Where could spills happen at the terminals?

The proposed facilities include new storage tanks, expansion of existing rail unloading areas, and new pipelines connecting the rail and vessel loading areas with the storage tanks.

- Westway proposes to build up to five new storage tanks, each holding up to 8.4 million gallons of oil.
- Imperium proposes to build up to nine new storage tanks, each holding up to 3.6 million gallons of oil. The proposal would also allow the eight existing tanks to store crude oil. Each of these tanks can hold 2 million gallons of oil.

### What is required now to reduce risks at oil terminals?

There are federal and Washington requirements for spill prevention, preparedness, and response at oil terminals. These are intended to reduce the risk of a spill, fire, or explosion, or improve the ability to train and respond.

- **Storage tank containment** must be able to hold the contents of the largest tank and rainfall.
- **Rail car transfer area containment** must be able to hold the contents of one rail car and rainfall.
- **Equipment** requirements for storage tanks, piping, hoses, loading arms, oil transfer equipment, lighting, and response equipment must be designed to minimize risks of incidents.
- **Fire suppression equipment and procedures** for the tanks, transfer areas, and on the vessels must be used.
- **Emergency shutdown equipment and procedures** are required.
- **Spill containment and emergency response training** must be implemented at the terminal.
- **Oil transfer equipment and procedures** must be followed when oil is transferred from a rail car to tanks, or transferred from the tanks to ships or barges. Transfers must be pre-boomed<sup>1</sup> unless it is not safe or effective.
- **Operations and facility plans** with maintenance requirements to prevent spills must be developed and implemented.
- **Spill contingency plans** that identify initial actions to stop a spill and contain it must be developed and implemented. Plans say who must be notified if a spill happens, and identify response equipment and contractors. This includes notifications to federal and state agencies, response contractors, and company officials.

### What are the potential risks of spills at the terminals?

SPILL SCENARIO	RISK		
	Likelihood of an Incident	Likelihood of Reaching Water	Potential Environmental Impact
Small spill during rail loading			
Small spill during vessel loading			
Medium spill during vessel loading			
Medium spill from pipeline or storage tank			
Large spill from storage tank			
	UNLIKELY                      LIKELY	UNLIKELY                      LIKELY	LOW                      SEVERE

These incidents are examples, but do not include all possible spills or impacts.

1. A "Boom" is a floating device used to contain oil discharged onto the surface of the water.

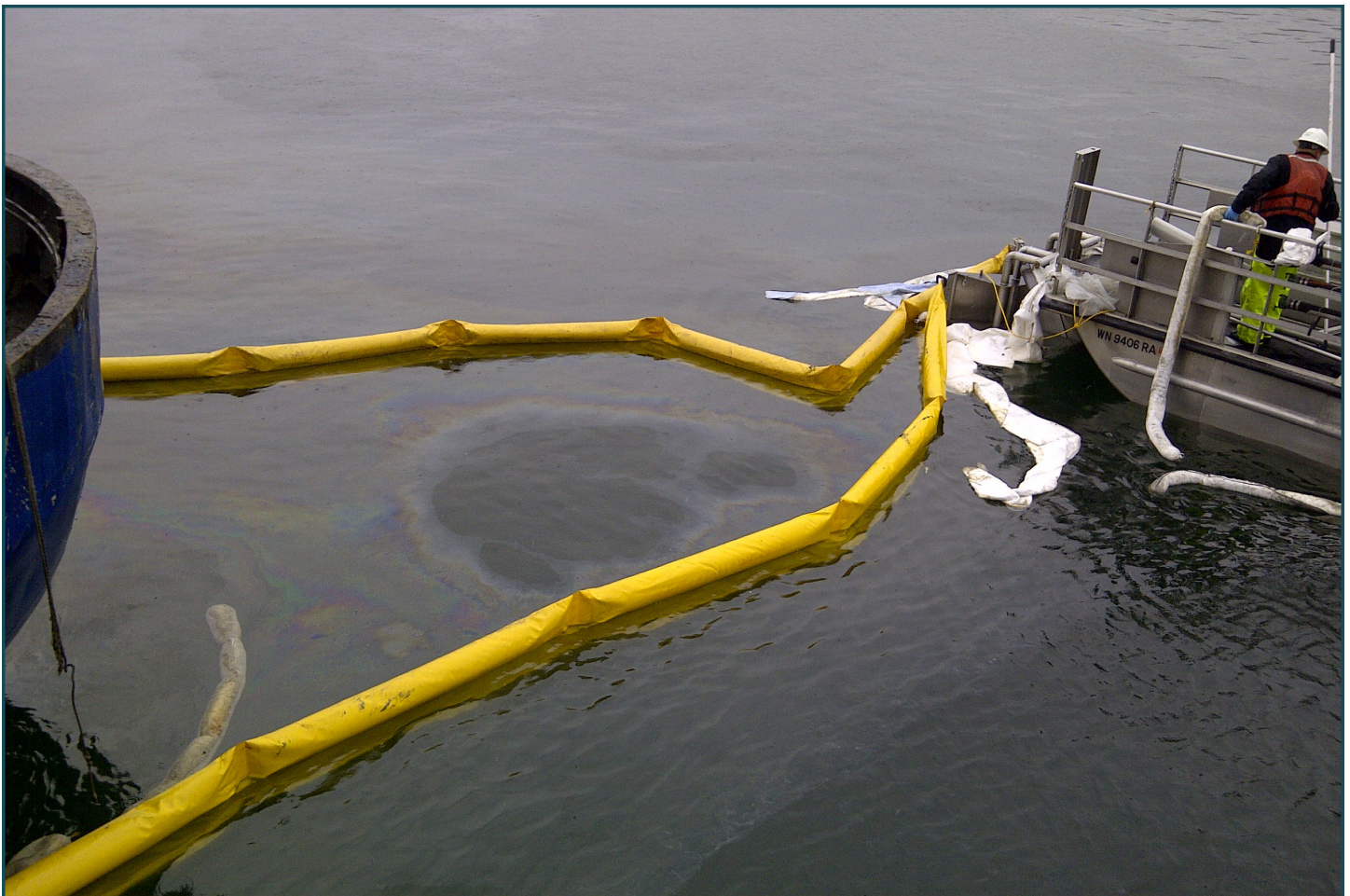


## What can Westway and Imperium do to reduce the impacts of spills, fires, or explosions at the terminals?

The studies identify the following mitigation measures to reduce risk or impacts:

- Study to how to maximize safety and effectiveness of prebooming oil transfers to tankers and tank barges. If prebooming cannot be done safely or effectively, a spill response boat, boom and crew will be ready during oil transfers.
- Identify financial responsibility for the costs of response and cleanup of a reasonable worst case oil spill at the facilities. This would include costs for natural resource damages, as well as costs to the state and affected counties and cities for their response actions. Washington Department of Ecology (Ecology) will approve the amount and it will be included in the oil spill contingency plans.
- Include contacts for tribes in the facility oil spill contingency plans.
- Hold a 1-day emergency preparedness workshop for local emergency responders, tribes, and communities. Westway and Imperium will coordinate the workshop with Ecology. It will be held before operations begin and once a year after that.

The complete list of measures is presented in Chapter 4, Section 4.4.3.1, *Applicant Mitigation*, of the Draft EISs.



Boom containment

# Along the Rail Line

## Where could spills happen along the rail line?

Trains carrying crude oil will travel from the Bakken region of the U.S. and Canada to the proposed facilities. They will enter the state near Spokane, travel south along the Columbia River Gorge, and then north on the main line, parallel to Interstate 5. At Centralia, trains will follow the PS&P rail line to the terminals.

Trains would carry oil to the terminals. A rail car holds about 30,000 gallons of oil. Each train would have about 120 rail cars, so each unit train would carry about 3.6 million gallons of oil.

## What is required now to reduce risks for trains?

There are federal requirements for spill prevention, preparedness, and response plans for trains. These are intended to reduce the risk of a spill, fire, or explosion. Washington has additional requirements for rail safety. New federal rules were approved with stricter requirements for trains carrying crude oil. Some of the requirements include the following:

- **Requirements for new and existing tank cars** carrying crude oil to have thicker walls and protection at the front and back of the cars. The new rail cars will be phased in over time.
- **Requirements for railroads to notify Washington State** of the number and volumes of trains carrying 1 million gallons or more of Bakken crude oil.
- **Classification of the type of crude oil** carried by trains to make sure the type of rail car used is appropriate.
- **Speed limits** on the PS&P rail line, limited to 25 miles per hour with some areas having lower speed limits. Along the main rail lines, speeds would be limited to 40 miles per hour.
- **Additional braking system requirements** for trains carrying crude oil.
- **Oil spill contingency plans for railroads.**

## What are the potential risks of spills during rail transport?

	RISK					
SPILL SCENARIO	Likelihood of an Incident		Likelihood of Reaching Water		Potential Environmental Impact	
Small spill during rail transport						
Medium spill during rail transport equal to one rail car						
Large spill during rail transport equal to three rail cars						
Large spill during rail transport equal to five rail cars						
Large spill during rail transport equal to 30 rail cars						
	UNLIKELY	LIKELY	UNLIKELY	LIKELY	LOW	SEVERE

These incidents are examples, but do not include all possible spills or impacts.



## What can Westway and Imperium do to reduce the impacts of spills, fires, or explosions from trains?

Westway and Imperium volunteered that they will only accept Bakken crude oil in rail cars that meet or exceed the new federal standards. The studies identified recommended mitigations measures to be in place before Westway and Imperium accept crude oil. These include:

- PS&P implements a contingency plan that includes notification procedures, defines a worst case spill amount, and details procedures to respond to spills. The plan would include equipment and trained personnel.
- PS&P meets with local emergency management officials to identify training needs for local responders. The rail line would participate with the local fire districts in a public safety drill at least once every 2 years.
- A foam truck is provided to the Elma Fire Department for fire-fighting capability along the PS&P rail line.
- Two trailers containing spill response equipment for use by initial local and emergency responders along the PS&P rail line are in place.
- Trains have a functioning two-way end-of-train device or distributed power for operations from the project site to the local yard.
- Provide annual 1-day workshop with Ecology for local emergency responders, tribes and communities.
- Provide annual 1-day hazard awareness oil spill training for the Quinault Indian Nation.
- Provide annual 1-day hazard awareness oil spill training for the Chehalis Tribe.
- The Grays Harbor Local Emergency Planning Committee's emergency response plan is updated to address crude oil operations.

The complete list of measures is presented in Chapter 4, Section 4.5.3.1, *Applicant Mitigation*, of the Draft EISs.



Photo: Ted Curphey

PS&P rail line

## From Vessels (Ships or Barges)

### Where could spills happen during vessel transport?

Vessels (ships and barges) would move oil from the facilities to refineries along the West Coast or abroad.





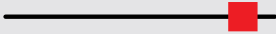
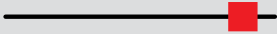



- Vessel size would be limited by the depth of the navigation channel in Grays Harbor. The ships that would be used at the terminals could carry up to 15.1 million gallons (360,000 barrels).
- Tank barges, including Articulated Tank Barges, could carry up to 6.6 million gallons (157,000 barrels).

### What is required now to reduce risks for vessels?

There are federal and Washington requirements for spill prevention, preparedness and response for ships and barges. These are intended to reduce the risk of a spill, fire, or explosion.

- **Areas to catch small spills** are required around each loading manifold, overfill pipe, and oil transfer connection point on the vessel.
- **Double-hulls** create a space between the outside of the vessel and oil tank areas. If the outer hull is damaged or ruptured, the inner tank with the oil may not be damaged.
- **Response equipment** is required on the vessels to contain and clean up spills of about 500 gallons.
- **Procedures** must be in place to prohibit sources of ignition when oil is transferred.
- **Inert gas system** on vessels are required that replace air with a non-flammable gas to provide an atmosphere that is not explosive.
- **Oil transfer procedures** must be implemented for transfer of oil on the vessel.
- **Vessel oil spill contingency plans** must be implemented that identify and ensure the response equipment and trained personnel are available.

### What are the potential risks of spills during vessel transport?

	RISK					
SPILL SCENARIO	Likelihood of an Incident		Likelihood of Reaching Water		Potential Environmental Impact	
Large spill from vessel collision						
Large spill from vessel allision at harbor entrance						
Large spill from vessel grounding						
	UNLIKELY	LIKELY	UNLIKELY	LIKELY	LOW	SEVERE
These incidents are examples, but do not include all possible spills or impacts.						



## What can Westway and Imperium do to reduce the impacts of spills, fires, or explosions from vessels?

The studies identified the following mitigation measures to reduce risk or impacts:

- Ensure loaded ships and barges have tug escorts through Grays Harbor. Ships would have a tug attached while in Grays Harbor. A second tug would help when arriving and departing the terminal dock.
- Work with the U.S. Coast Guard, Ecology, Port of Grays Harbor, and Grays Harbor Safety Committee to develop and implement a formal vessel management system.
- Require tank barges for Bakken crude oil to use inert gas to ensure a non-flammable atmosphere in the tanks.
- Coordinate with the Port of Grays Harbor and work as a member of the Grays Harbor Safety Committee on procedures for escorting, tethering, and maneuvering laden tank vessels during an emergency.
- Develop a way to provide information on potential incidents to commercial and recreational fishing boats.

The complete list of measures is presented in Chapter 4, Section 4.6.3.1, *Applicant Mitigation*, of the Draft EISs.



Grays Harbor Terminal 1 and Terminal 2

## What are the risks of fire and explosions related to the projects?

In general, fires and explosions would only occur as the result of an oil spill. But not all spills would result in fire or explosion. Heavy crude oil does not generate many vapors if spilled, but Bakken crude oil could present a greater risk for fire and explosions. All oil is handled with precautions to prevent fires and explosions.

For trains, an incident is most likely to occur during transport when higher speeds provide enough energy to generate a spark. Train speeds along the PS&P rail line are limited to 25 mph, so the likelihood of a fire or explosion is reduced.

The potential for harm or damage if a fire occurred with or without an explosion could be quite severe.

	RISK					
SPILL SCENARIO	Likelihood of an Incident		Likelihood of Fire/Explosion		Potential Environmental Impact	
Small spill during rail loading						
Small spill during vessel loading						
Medium spill during vessel loading						
Medium spill from pipeline or storage tank						
Large spill from storage tank						
Small spill during rail transport						
Medium spill during rail transport equal to one rail car						
Large spill during rail transport equal to three rail cars						
Large spill during rail transport equal to five rail cars						
Large spill during rail transport equal to 30 rail cars						
Large spill from vessel collision						
Large spill from vessel allision at harbor entrance						
Large spill from vessel grounding						
	UNLIKELY	LIKELY	UNLIKELY	LIKELY	LOW	SEVERE

These incidents are examples, but do not include all possible spills or impacts.



## What is required now to reduce risks of a fire or explosion?

There are federal and Washington state requirements for facilities, trains, and vessels that are intended to reduce the risk of a fire or explosion including:

- **Storage tank design** requirements to separate tanks by appropriate distances. Floating roofs reduce flammable vapors inside the tanks.
- **Facility equipment** like non-sparking tools and explosion-proof equipment. All equipment would be grounded.
- **Personnel** training including precautions to prevent ignition and incident response.
- **Standard procedures** for safe operations and emergency response actions.
- **New rail car requirements** for new and existing tank cars. This includes fittings on top of the cars, protected bottom outlets, and making rail car heads and shells more puncture resistant.
- **Classification and reporting of crude oil for trains** to ensure the appropriate type of rail car is used.
- **Speed limits** on the PS&P rail line, limited to 25 miles per hour with some areas having lower speed limits. Along the main rail lines, speeds would be limited to 40 miles per hour.
- **Additional braking system requirements** for trains carrying crude oil.
- **Vessel design to reduce ignition risks.** These include structural, mechanical, and electrical design requirements.
- **Inert gas system** on vessels are required that replace air with a non-flammable gas to provide an atmosphere that is not explosive.
- **Vessel emergency steering systems** to reduce the risk of grounding or collision.

## What can Westway and Imperium do to reduce the impacts of fires or explosions?

The mitigation measures listed on the preceding pages to reduce risks of oil spills in general would also help to reduce the risk of fires or explosions, including:

- A foam truck is provided to the Elma Fire Department for fire-fighting capability along the PS&P rail line.
- Two trailers containing spill response equipment for use by initial local and emergency responders along the PS&P rail line are in place.



Rail containment



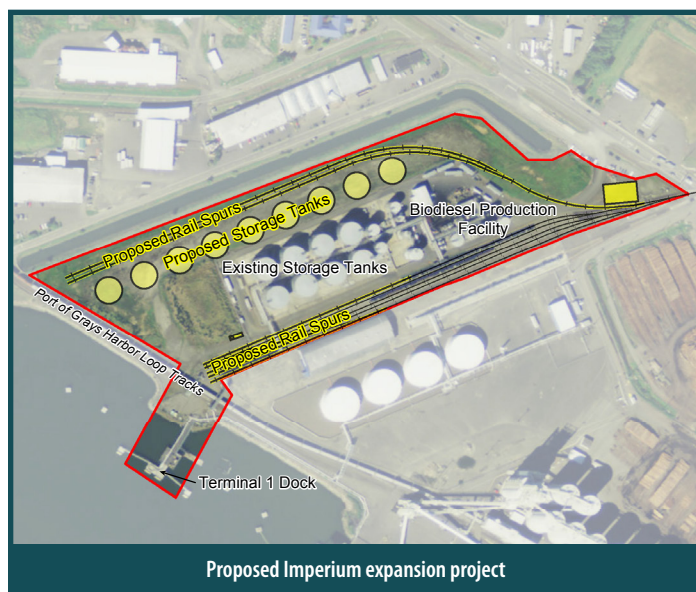
# Impacts on People and the Environment from Spills, Fires, or Explosions

## What environmental damage could occur if there was an incident?

The type and extent of damage would vary depending on the nature of the incident. Factors that influence the spread of oil include the location, weather, and the response to an incident.

Crude oil spills, fires, or explosions can harm or damage plants, animals, and humans and adversely affect the environment. Grays Harbor and the Chehalis River provide habitat for numerous sensitive and unique plant and animal species. The area also provides important commercial and recreational opportunities, including fishing and shellfish growing, and cultural, historical, and tribal resources.

The impacts from an incident can vary in magnitude, from minimal to severe, depending on the size, location, and nature of the incident. Human health, water, plants, animals, aesthetics, recreation, cultural resources, tribal resources, and other resource areas can all be affected, with different results from a spill, fire, or explosion.



## Where is more information available?

Within the Draft EISs, Chapter 4, *Environmental Health and Safety*, has detailed information, analysis, and findings related to the risks of crude oil spills, fires, and explosions. Detailed information on all resource areas is presented in Chapter 3, *Affected Environment, Impacts, and Mitigation*, including the following sections: Section 3.2, *Air*; Section 3.3, *Water*; Section 3.4, *Plants*; Section 3.5, *Animals*; Section 3.8, *Land and Shoreline Use*; Section 3.9, *Aesthetics, Light, and Glare*; Section 3.10, *Recreation*; Section 3.11, *Historic and Cultural Preservation*; and Section 3.12, *Tribal Resources*. The potential impacts of oil spills, fires, and explosions on these resources and human health are addressed in Section 4.7, *Impacts on Resources*.

There are additional fact sheets discussing *Air*, *Water*, *Plants and Animals*, *Recreation*, *Historic and Cultural Preservation*, and *Tribal Resources*.

Visit [www.ecy.wa.gov/GraysHarbor](http://www.ecy.wa.gov/GraysHarbor) for more information on the proposed projects.